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TRENDS IN NEW JERSEY FORESTS

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Research Station NY 4

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New Jersey Department
of Environmental Protection
New Jersey Division
of Parks & Forestry



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NEW JERSEY FORESTS

Forests protect watersheds, provide opportunities for recreation and settings for aesthetic enjoyment, serve as habitat for wildlife, and produce wood and other forest products. The forests of New Jersey contribute greatly to the quality of life of the State's residents, making the Garden State a better place in which to live. Highlighted here are significant trends in New Jersey forests during the last half century. The data in this publication are summarized from reports published by the USDA Forest Service, which periodically inventories the forest resources of the 50 states. In cooperation with the New Jersey Division of Parks and Forestry, the Northeastern Research Station completed the fourth statewide inventory of New Jersey's forest resource in 1999.

NEW JERSEY'S FOREST AREA STABLE

Forests cover 45 percent of New Jersey, or 2.1 million acres. This amount of forest cover is remarkable in a state that has seen tremendous population growth and economic development in the last decade. Forest land in New Jersey has remained relatively stable because most of the population growth has been concentrated in areas adjacent to New York City, and because there has been a decrease in land in farms. Land in farms is now less than half of what it was in 1956, a loss of over a million acres. Although much of what formerly was farmland has been developed, a substantial portion was abandoned and reverted to forest through natural regeneration. These new forests have offset losses in forest land due to development.

Additionally, New Jersey is a national leader in protecting land by regulatory legislation. Forest land conserved as State-owned parks, state forests, recreation areas, and other green space has increased during this period. If future growth is managed wisely, some of the negative impacts of urban sprawl will be minimized. Yet, despite these efforts, declines in forest land area are likely in the future, because development pressures continue to increase on forest as well as farmland.

AREA BY LAND USE, 1999

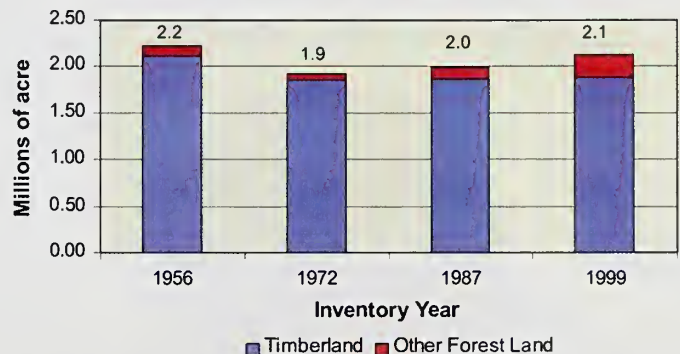


The 1999 forest inventory reported that forest land in New Jersey increased by 143,900 acres since the previous inventory in 1987. Most of this increase is attributed to the use of a more inclusive definition of forest land. Small forested areas in rights-of-way and in certain urban areas that previously were classified as nonforest were reclassified as forest. These areas are at least an acre in size, more than 120 feet wide, and stocked with trees. Because the importance of all forest land is increasingly being recognized, this change in inventory procedure was necessary. Otherwise, there has been little change in forest area in the State since the 1950's.

Forest land is categorized by the Forest Service as timberland or "other" forest land. These categories aid in understanding the availability of forest resources and forest management

planning. Although New Jersey is not thought of as a timber-producing state, 88 percent of the State's forest land (nearly 1.9 million acres) is classified as timberland that is potentially available for harvesting. The amount of timberland area has not changed appreciably in the last three decades even though New Jersey's population increased by 57 percent to 8.4 million from 1956 to 1999.

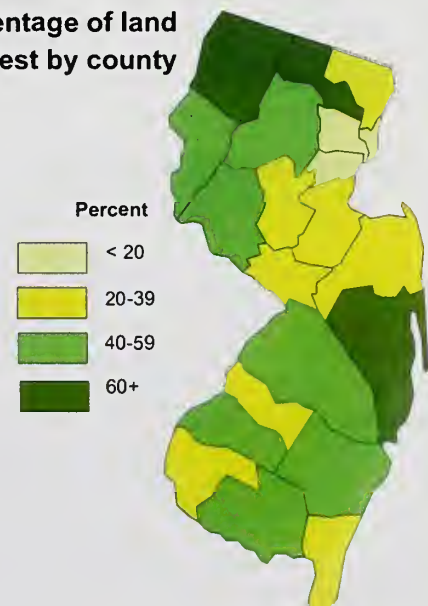
FOREST-LAND AREA TRENDS



The other category of forest land includes reserved lands and unproductive forests. Harvesting for timber products on these lands is administratively restricted or economically impractical. Examples include parks, wildlife preserves, and wetlands where growing conditions are poor. These are mostly owned by public agencies. This category increased in area by nearly 150,000 acres to 256,100 acres from 1956 to 1999. Nearly all of this increase is due to the reclassification of timberland.

Forested areas are not distributed evenly across the State. Sussex County is the most heavily forested (68 percent); Essex, Hudson, and Union Counties are the least forested.

Percentage of land in forest by county



PEOPLE AND FORESTS

The size of the human population and how people live on the land are significant forces that shape the forest. With over 8 million people, New Jersey is the Nation's most densely populated state, yet it ranks ninth in the percentage of land area covered by forests. As mentioned earlier, despite New Jersey's high degree of urbanization, there remain large areas of natural vegetation in part because the State's population is distributed unevenly. However, this is changing as urban areas continue to spread out into rural areas and development increases throughout the state.

Sixty-two percent of New Jersey's forest land is owned by an estimated 88,700 private individuals and enterprises; federal, state, and other public owners hold the remaining 38 percent. New Jersey has the highest percentage of forest land in public ownership of any state east of the Mississippi.

OWNERSHIP OF FOREST LAND IN NEW JERSEY



Wildlife biologists have discovered that breaking up large tracts of continuous forest into many smaller patches to accommodate roads, housing construction, and other development activities has had a detrimental effect on many species of birds and other wildlife. In New Jersey, 68 percent of the private forest landowners hold less than 10 acres of forest. Collectively this group owns about 10 percent of the forest land, which is mostly used as homesites. Since 1972, the estimated number of these owners with less than 10 acres of forest has increased by 75 percent. Unlike owners of large tracts, these owners are less likely to manage their forests or to allow access to their land by others for activities such as hunting and fishing.

FORESTS ARE MATURING WITH FEWER STANDS OF YOUNG TREES

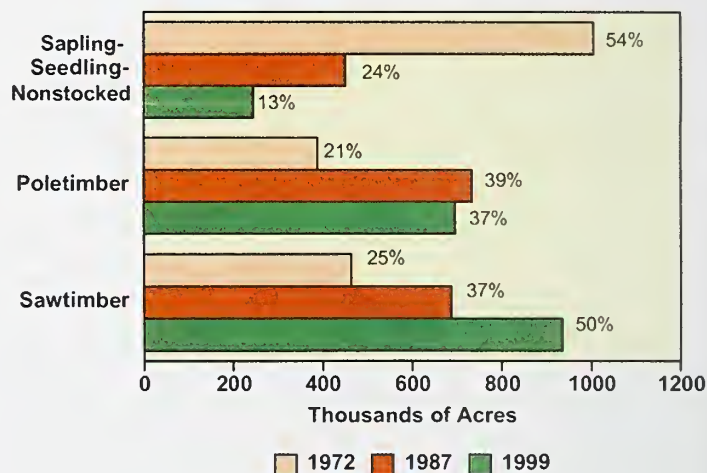
Timberland is classified by the size of the trees growing on it. In New Jersey, stands in which most of the stocking is in large trees suitable for sawlogs, have increased in acreage since the last forest inventory of the State. These stands have many attributes that benefit wildlife: an understory with herbaceous plants and shrubs that provides food and cover, bole cavities and bark flaps for nesting and feeding sites, respectively, and large, dead trees, both standing and on the forest floor. People enjoy activities such as hiking and camping in stands dominated by large trees because they find them attractive and aesthetically pleasing. Such benefits from these stands should increase as they continue to mature.

In New Jersey, more than one-third of the forest stands are of poletimber size. Trees in these stands are not sufficiently mature to produce large amounts of nuts and seeds, and often form dense overstories that inhibit the growth of understory vegetation.

Stands classified as sapling-seedling and nonstocked decreased from 54 percent of timberland in 1972 to 13 percent in 1999. Typically found in such stands are early successional, pioneer tree species as well as a variety of herbaceous and shrub plants that need full sunlight to thrive. These stands provide unique nesting and feeding habitat for wildlife.

The shift to the mature sawtimber-size class has contributed to increases in the number of wild turkey, pileated woodpecker, and black bear, though the corresponding decline in species that require early successional stands, for example, ruffed grouse and chestnut-sided warbler, is of concern to wildlife biologists. Besides offering diverse habitat for wildlife and providing a steady flow of wood products, forests that contain all stand-size classes might be more resistant to devastating outbreaks of insects and diseases.

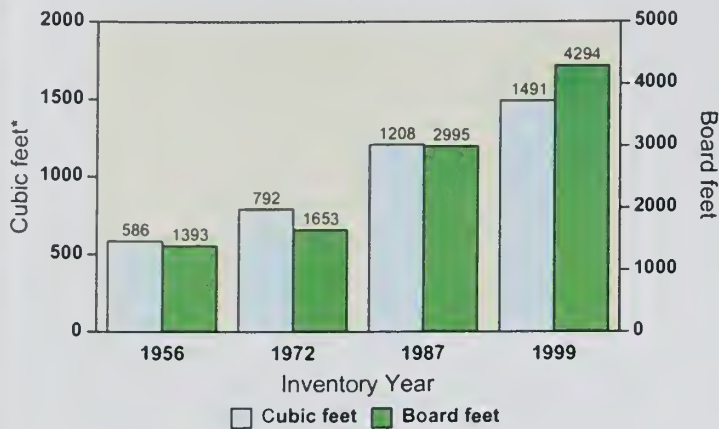
TIMBERLAND AREA BY STAND-SIZE CLASS AND PERCENT OF TOTAL BY INVENTORY YEAR



THE VOLUME OF TREES HAS INCREASED

New Jersey's forests now contain more and larger trees. Foresters calculate the volume in the bole of trees between a 1-foot stump and a 4-inch top diameter in terms of cubic feet of wood. Average tree volume per acre increased from 586 cubic feet in 1956 to 1,491 cubic feet in 1999. During the most recent inventory period, growing-stock volume increased by 24 percent, with the portion suitable for sawlogs increasing by 44 percent to 8.1 billion board feet.

AVERAGE VOLUME PER ACRE

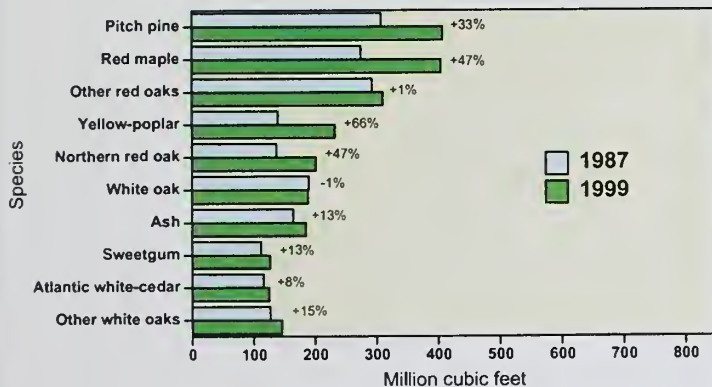


* 80 cubic feet of solid wood is equal to approximately 1 cord

PITCH PINE LEADS IN VOLUME

New Jersey's forests contain a rich mix of tree species. The 1999 inventory identified 77 species, including many that are uncommon. The 10 most common tree species and species groups account for nearly 79 percent of total cubic-foot volume. Pitch pine leads in volume followed closely by red maple. Combined oak species represent 30 percent of total volume, down from 47 percent in 1956. The portion of total volume in red maple increased from 8 to 13 percent from 1956 to 1999.

CHANGE IN VOLUME OF TOP SPECIES



CHANGES IN LAND USE ACCOUNT FOR MOST OF VOLUME REMOVED FROM TIMBERLAND

During the last 50 years in New Jersey, the growth of trees has outpaced removals by a wide margin. The most recent inventory revealed that since 1987, on an annual basis, the net growth of trees averaged 58 million cubic feet while removals averaged 36 million cubic feet. This surplus of growth has meant an annual net increase of 0.8 percent in the volume of wood on the State's timberland. Sixty-eight percent of removals are attributed to the conversion of forests to nonforest uses; 27

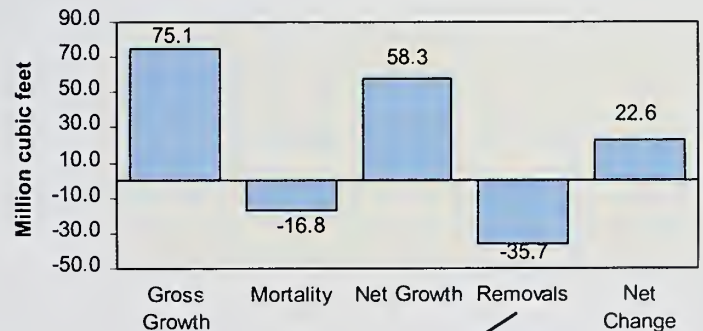
percent is attributed to timberland reclassified to reserve status, and 5 percent to harvesting. Forest growth responds quickly after harvesting so long as the land remains in timberland and reserved forests continue to provide benefits other than timber products. If forests are converted to other land uses, any growth from that land is lost permanently.

Fire, wind, insects, and diseases are among the factors that contribute to tree mortality. In New Jersey, average annual mortality was 17 million cubic feet or 0.6 percent of the inventory volume. This rate is similar to those for neighboring states and is considered normal. Today, on average, there are 15 standing dead trees per acre of timberland.

COMPONENTS OF VOLUME CHANGE ON TIMBERLAND 1987-99

Gross Growth – Mortality = Net Growth

Net Growth – Removals = Net Change



68% due to land use changed to nonforest use
27% due to land use changed to reserved forest land
5% due to harvesting

CONCERNS AND OBSERVATIONS

The period from 1956 to the present has been remarkable for the amount of land that has remained forested in New Jersey despite increasing economic development. These forests are maturing, as shown by increases in stand size and volume of trees per acre. Overall evaluations of forest conditions show that the health of New Jersey's forests is good despite concerns related to introduced forest insect pests such as gypsy moth and the hemlock wooly adelgid.

Forest values often are difficult to discern and the adverse effects of degradation are seldom immediately evident. As the dynamics of forests are better understood, the importance of New Jersey's forests to its inhabitants will only increase. The challenge for the future is to protect this valuable forest resource from the pressures of a growing population and from introduced pests, diseases, and invasive exotic plants, while ensuring the continued delivery of the many goods and services that New Jersey residents have come to expect from the State's forest land.





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For more information contact: Forest Inventory & Analysis (610) 557-4051, or write: USDA Forest Service, FIA Unit, 11 Campus Boulevard, Suite 200, Newtown Square, PA 19073. Website <http://www.fs.fed.us/ne/fia>

Or write: Department of Environmental Protection, N.J. Forestry Services, 501 E. State Street, P.O. Box 404, Trenton, New Jersey 08625-0404; or call (609) 292-2531; Website <http://www.state.nj.us/dep/forestry/service/>

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